

REMARKS

The foregoing amendment incorporates all or a portion of the subject matter of Claim 31 into most of the claims in this application and is intended to put all the claims into condition for allowance.

Objections to the Specification

The examiner is objecting to the specification because of the presence of trademarks. The undersigned attorney has reviewed the specification carefully and can confirm that all the trademarks are capitalized. Furthermore, the generic names and functions of the various ingredients, identified by trademark or generic name, are set forth in paragraphs 0060, 0061, 0062 and 0148 of the published application. With respect to the trademark Teric, it refers to various non-ionic surfactants obtained from Orica Chemicals (Sydney, Australia).

Rejections under 35 USC § 112

In paragraph 4 of the office action, Claims 17-19, 24-30 and 32-36 have been rejected under the first paragraph of 35 USC § 112. This rejection appears to be based on (1) lack of enablement for the particular materials identified as component (d) and (2) the term "linear conjugated" which appears in Claims 17, 18, 20 and 24.

With the foregoing amendment, the various polar, ionic and aromatic compounds that comprise component (d) are identified in Claims 17 and 20 and the various polar and aromatic compounds that comprise component (d) are identified in Claim 24.

The term "liner conjugated" has been deleted from all of the claims in the application.

In paragraph 6 of the office action, all of the claims have been rejected under the second paragraph of 35 USC § 112. Specifically, Claims 17 and 20 are indefinite because of the term "linear conjugated" and the claims in general are said to be indefinite because it is not clear how much of a particular material, such as oil or solvent, should be attributed to each of the recited components.

The term "linear conjugated" has been deleted from Claims 17 and 20, thereby obviating this particular ground of rejection. With respect to indefiniteness, applicants have amended all of the claims to limit the ingredient (c) to a solvent which must be either an n-paraffin, an isoparaffin or a naphthene. All of the solvents used in the specific examples fall into one of these three categories. Specifically, examples 2, 3, 5-12, 14-23 and 25-68 all include either an n-paraffin or an isoparaffin. Example 13 uses Solvesol 150, a naphthene solvent. None of the solvents included in component (c) is a propellant. Since all of the claims set forth the amounts of the various components, it is believed that all the claims now comply with the requirements of 35 USC § 112.

Rejection over Bassam U.S. Patent No. 5,849,264

Claims 17-19 and 25-36 have been rejected as anticipated by or, in the alternative, obvious over Bassam U.S. Patent No. 5,849,264.

Claims 17-19 and 25-36 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bassam et al. 5,849,264. The claims of Bassam et al. refer to an insecticidal composition in the form of water-in-oil emulsion comprising (a) 2-80% w/w propellant, (b) 0.5-8% w/w of one more emulsifiers selected from di- and tri-sorbitan esters, polyglycerol esters, etc., (c) 1-20% w/w of a solvent selected from carboxylic acid (e.g. fatty acids column 3, lines 65-67), (d) 0.001-5% w/w of a pyrethroid insecticide and (e) water bring the total composition to 100% w/w. Component (d) comprises carboxylic acids and diethyl orthophthalate as well. The solvents of Bassam et al. are selected from fatty acid and dialkyl phthalates. Hence, as long as applicants such fatty acids cannot clearly and unambiguously demonstrate that will not fulfill the conductivity and phthalates criteria of the claims the compositions are deemed to be anticipated by Bassam et al.

Applicants set forth (paragraph [0056] of the original specification) the "compositions of the present invention, when sprayed through conventional aerosol spray heads, form droplets which are imparted with a unipolar charge of at least about $+/-1 \times 10^{-4}$ C/Kg". Since the compositions are anticipated and their use in conventional aerosol spray heads is disclosed, the methods as claimed are deemed anticipated.

To the extent the claims differ in the functional properties claimed, some variation of the compositions of the reference is disclosed and therefore some variation of the properties would have been expected. Applicants have not shown the properties to be critical to the invention.

This rejection is respectfully traversed.

The rejected claims are directed to a method for enhancing the unipolar charge imparted to droplets of an emulsion when said emulsion is discharged from an aerosol spray device. The prior art, as exemplified by Fox WO 99/21659, typically requires special features incorporated into the aerosol spray head so that a particular charge-to-mass ratio is achieved in the sprayed-out liquid droplets. Applicants have now discovered that, by proper choice of ingredients in the sprayed-out composition, the unipolar charge can be enhanced. The emulsion is either an oil-in-water or a water-in-oil emulsion comprising (a) a propellant, (b) a non-ionic surfactant, (c) optionally an n-paraffin, isoparaffin or naphthene solvent, and (d) a small amount of particular polar, ionic or aromatic compound. The key to enhancing the unipolar charge is in the choice of the amount of component (d); it must range between about 0.1 and about 80% w/w based on the amount of non-ionic surfactant (b). There is the further limitation that the amount of component (d) must be chosen so that the theoretical conductivity of the emulsion is less than the bulk conductivity of the emulsion, with a differential as set forth in Claim 17.

Bassam discloses an insecticidal water-in-oil emulsion which can comprise a propellant and one or more of components that happen to fall with the definitions of applicants' components (b), (c) and (d). However, the claims under consideration are directed to a method of enhancing the unipolar charge of a sprayed-out emulsion and there is nothing in the Bassam disclosure which is concerned with these methods. Furthermore, applicants respectfully disagree with the examiner in his statement that the compositions forming the discharged droplets are anticipated by Bassam. Bassam does not recognize the distinction between the various components required in applicants' composition. Indeed, applicants' solvents (n-paraffins, isoparaffins, naphthenes) are lumped together with diethyl phthalates and fatty acids in Bassam's category of "solvent". In applicants' claimed methods, fatty acids and diethyl phthalates do not function as solvents; rather, they are the additional ingredients that, in their proper small

amounts relative to non-ionic surfactant, provide the charge enhancement. Bassam is replete with specific examples containing non-ionic surfactants, but there does not appear to be any disclosure of non-ionic surfactants in combination with, for example, fatty acids or a diethyl phthalates. Obviously, there is no disclosure of any quantitative relationship between these two ingredients.

Clearly, Bassam does not anticipate any of applicants' Claims 17-19 or 25-36 because it does not disclose methods for enhancing the unipolar charge of a sprayed-out emulsion. Likewise, Bassam does not render these claims obvious because it does not disclose any compositions containing both applicants' components (b) and (d) and does not disclose any possible quantitative relationship between these two ingredients.

Rejection over Stopper U.S. Patent No. 4,536,323

Claims 17-19 and 25-35 have been rejected as either anticipated by Stopper U.S. Patent No. 4,536,323 or as obvious thereover.

Claims 17-19 and 25-35 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Stopper 4,536,323, esp. column 4, line 34 - column 5, line 19, noting also column 3, line 55 - column 4, line 19. Sodium lauryl sulfate in the typical composition in column 4 would fulfill the conductivity criteria of claim 17 herein.

Applicants set forth (paragraph [0056] of the original specification) the "compositions of the present invention, when sprayed through conventional aerosol spray heads, form droplets which are imparted with a unipolar charge of at least about +/- 1 x 10⁻⁴ C/Kg". Since the compositions are anticipated and their use in conventional aerosol spray heads is disclosed, the methods as claimed are deemed anticipated.

To the extent the claims differ in the functional properties claimed, some variation of the compositions of the reference is disclosed and therefore some variation of the properties would have been expected. Applicants have not shown the properties to be critical to the invention.

This rejection is respectfully traversed.

As explained above in connection with the rejection over Bassam U.S. Patent No. 5,849,264, applicants' invention is directed to a method for enhancing the unipolar charge imparted to compositions sprayed-out from an aerosol device. The Stopper reference is concerned with oil-in-water microemulsions which are formulated in such a

way as to reduce flammability when flammable propellants are used. Stopper is not concerned with imparting unipolar charges to the sprayed-out contents of the disclosed microemulsions and does not indicate that, by possible choice of particular components in the micro emulsion, a unipolar charge may be created or enhanced. The claims that have been rejected all relate to methods for enhancing unipolar charge and, since Stopper is not concerned with electrostatic charging of sprayed-out aerosol emulsions, the Stopper reference is clearly not an appropriate reference under 35 USC § 102(b).

With respect to obviousness, it is true that the Stopper reference discloses various ingredients that can constitute applicants' components (a), (b), (c) and (d). However, there is no teaching, either in a specific example or anywhere else in the specification, of any composition that would incorporate all four of these components. Given the fact that the references not concerned at all with unipolar charges imparted to sprayed-out aerosol emulsions, it is submitted that applicants' claims under consideration would not have been obvious over the Stopper reference.

Rejection over Fox WO 99/21659 in view of Stopper or Bassam

All of the claims have been rejected as obvious over Fox WO 99/21659 in view of the previously-discussed Stopper or Bassam references.

Claims 17-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al., WO 99/21659, in view of Stopper 4,536,323, or Bassam et al. 5,849,264.

Fox et al describe an aerosol spray device and method of reducing the droplet size of a composition sprayed from such device. The preferred aerosol composition comprises an oil phase, an aqueous phase, a surfactant and a compressed propellant (page 8, lines 4-12). A charge is imparted to the liquid droplets solely by the interaction between the liquid within the aerosol spray device and the spray device itself as the liquid is sprayed therefrom (page 2, line 22 - page 3, line 22).

Fox et al differs in the particular emulsion compositions employed in the aerosol methods and the spray device of claims 21-24.

Bassam et al. refer to an insecticidal composition in the form of water-in-oil emulsion comprising (a) 2-80% w/w propellant, (b) 0.5-8% w/w of one more emulsifiers selected from di- and tri-sorbitan esters, polyglycerol esters, etc., (c) 1-20% w/w of a solvent selected from carboxylic acid (e.g. fatty acids column 3, lines 65-67), (d) 0.001-5% w/w

of a pyrethroid insecticide and (e) water bring the total composition to 100% w/w. Component (d) comprises carboxylic acids and diethyl orthophthalate as well.

Stopper, 4,536,323, esp. column 4, line 34 - column 5, line 19, noting also column 3, line 55 - column 4, line 19. Sodium lauryl sulfate in the typical composition in column 4 would fulfill the conductivity criteria of claim 17 herein.

Fox et al (page 7, line 32 et seq) discloses that changes in the product formulation can affect the charging levels. Fox et al further teaches that an emulsion of an immiscible hydrocarbon and water will carry a higher charge to mass ratio when sprayed from the aerosol device than either water or hydrocarbon alone.

These references are combinable because they teach aerosols and emulsions employed in said aerosols. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the compositions of Bassam et al or Stopper in the aerosol devices of Fox et al (see page 4, lines 29 et seq) for the advantage of imparting a charge to said aerosol droplets, which has the effect of said droplets repelling each other, increased spread, and smaller droplet size of the aerosol.

Applicants set forth (paragraph [0056] of the original specification) the "compositions of the present invention, when sprayed through conventional aerosol spray heads, form droplets which are imparted with a unipolar charge of at least about +/-1 x 10⁻⁴ C/Kg". Since the compositions are anticipated and their use in conventional aerosol spray heads is disclosed, the methods as claimed are deemed anticipated.

To the extent the claims differ in the functional properties claimed, some variation of the compositions of the reference is disclosed and therefore some variation of the properties would have been expected. Applicants have not shown the properties to be critical to the invention.

This rejection is respectfully traversed, particularly in view of the foregoing amendment.

In paragraph 0005 of applicants' published application, they refer to WO 97/28883 as describing an aerosol spray device which is constructed so that a unipolar charge is imparted to sprayed-out particles. The device disclosed in Fox reference is similar and can be used in connection with the methods claimed in applicants' Claims 17-20, 25-30 and 32-36. Likewise, the device disclosed in the Fox reference can be used as part of the combination set forth in Claims 21-24. Essentially, where applicants' claims differ from the Fox disclosure is in the contents of the aerosol spray device. Recognizing this difference, the examiner attempts to bridge the gap by using the Bassam and Stopper disclosures as secondary references.

Bassam U.S. Patent No. 5,849,264 has been discussed above in connection with the rejection of applicants' method claims for anticipation and/or obviousness. Likewise, Stopper U.S. Patent No. 4,536,323 has been discussed in connection with the rejection of certain method claims for anticipation and/or obviousness.

The rejection over the Fox reference covers, in addition to the various method claims, applicants' aerosol spray device Claims 21-24. In order to highlight the difference between the composition contained in applicants' spray device and the compositions disclosed in Stopper, the amendment to Claim 24 that sets out the various compounds that can constitute component (d) does not include the ionic compounds of group (d)(I). Thus, the compositions which constitute the contents of applicants' claimed aerosol spray device in Claim 24 no longer includes the only compound disclosed by Stopper that would fall within the definitions of applicants' component (d).

The examiner points to the paragraph of the Fox reference beginning at page 7, line 32. The reference indicates that changes in product formulations affect charging levels and says that a mixture or an emulsion of hydrocarbon and water will carry a higher charge-to-mass ratio than either water alone or a hydrocarbon alone. Applicants are not claiming the broad concept that changes in formulation can influence the amount of a unipolar charge. Rather, their invention is directed to the specific concept that a combination of component (b), a non-ionic surfactant, with component (d) in a specific limited ratio will enhance unipolar charge. This is not disclosed in Fox or in any of the two secondary references. Thus, combining Fox with either Bassam or Stopper would not lead to applicants' claimed methods or claimed aerosol spray devices.

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CONCLUSION

In view of the foregoing amendment and these remarks, it is believed that all claims remaining in this application are in condition for allowance. Favorable action is therefore requested.

Respectfully submitted,

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